

WHAT IS CLAIMED IS:

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1. An image forming apparatus, comprising:  
one or more processing units wherein each  
processing unit processes data for forming an image;  
a control unit that communicates with each  
10 of said processing units directly, or indirectly  
through another one or more of said processing units;  
an update program acquiring unit that  
acquires an update program for updating programs of  
said processing units and a program of said control  
15 unit; and  
a program updating unit that updates the  
programs of said processing units in the order of the  
number of said other one or more processing units  
through which said control unit communicates with  
20 each of said processing units.

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2. The image forming apparatus as claimed

in claim 1, wherein said program updating unit  
determines the order in which the programs of said  
processing units are updated thereby to create update  
order information based on the update program  
5 acquired by said update program acquiring unit.

10 3. The image forming apparatus as claimed  
in claim 2, wherein said program updating unit  
correlates the order in which the programs of said  
processing units are updated with names of the  
programs.

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4. The image forming apparatus as claimed  
20 in claim 2, wherein the update order information  
includes information indicating update status.

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5. The image forming apparatus as claimed  
in claim 1, wherein

said control unit has one or more  
application programs related to image forming  
5 processing; and

said program updating unit can update the  
application programs individually.

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6. The image forming apparatus as claimed  
in claim 1, wherein

one of said processing units is a display  
15 unit that displays information of the image forming  
apparatus; and

said program updating unit updates the  
program of the display unit after the programs of  
other processing units and the program of said  
20 control unit are updated.

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7. The image forming apparatus as claimed

in claim 1, further comprising a communication unit  
for connecting the image forming apparatus to a  
network; wherein

5       said update program acquiring unit acquires  
the update program using said communication unit.

10               8. The image forming apparatus as claimed  
in claim 7, wherein said control unit reboots updated  
ones of said processing units in the order in which  
said processing units are updated.

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              9. The image forming apparatus as claimed  
in claim 7, wherein said control unit reboots updated  
20   ones of said processing units after all to-be-updated  
programs have been updated.

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10. The image forming apparatus as claimed  
in claim 7, wherein said control unit, when a primary  
program thereof is to be updated, executes a  
secondary program stored in a second memory region  
5 other than a first memory region in which the primary  
program is stored.

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11. The image forming apparatus as claimed  
in claim 10, wherein said control unit, when the  
primary program thereof is being updated, executes  
the secondary program stored in the second memory  
15 region of a volatile memory.

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12. The image forming apparatus as claimed  
in claim 11, the secondary program is smaller in size  
than the primary program.

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13. The image forming apparatus as claimed  
in claim 7, wherein said control unit, when updating  
the program of one of said processing units, causes  
the one of said processing units to operate in a  
5 restricted mode.

10 14. The image forming apparatus as claimed  
in claim 7, wherein said control unit, when  
communication with said processing unit is  
disconnected, reboots itself.

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15. The image forming apparatus as claimed  
in claim 7, wherein said control unit reboots itself  
20 in a predetermined time after the last one of updated  
processing units is rebooted.

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16. The image forming apparatus as claimed  
in claim 7, wherein said control unit stores  
information indicating a state of the image forming  
apparatus in a non-volatile storage unit before  
5 rebooting itself, and restores the image forming  
apparatus to the stored state after rebooting itself.

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17. The image forming apparatus as claimed  
in claim 16, wherein the state of the image forming  
apparatus is a state in which the power consumption  
of the image forming apparatus is reduced.

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18. The image forming apparatus as claimed  
20 in claim 17, further comprising a display unit that  
displays information related to the image forming  
apparatus;

wherein the state of the image forming  
apparatus is information displayed on the display  
25 unit.

19. The image forming apparatus as claimed  
in claim 18, wherein said display unit displays the  
progress of the update of the programs.

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20. The image forming apparatus as claimed  
10 in claim 19, wherein said display unit, if the image  
forming apparatus is set at the state in which the  
power consumption thereof is reduced, does not  
display the progress of the update of the programs.

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21. The image forming apparatus as claimed  
in claim 7, wherein said program updating unit  
20 creates an update management table including  
information related to the acquired update program.

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22. The image forming apparatus as claimed  
in claim 21, wherein the update management table  
includes module IDs that specify the acquired update  
program.

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23. The image forming apparatus as claimed  
10 in claim 7, wherein said processing units include  
processing units that said control unit can directly  
reboot and processing units that automatically reboot  
themselves in response to a request from said control  
unit.

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24. The image forming apparatus as claimed  
20 in claim 7, further comprising:

an update result information creating unit  
that creates update result information indicating  
results of the update of the programs; and

an update result outputting unit that  
25 outputs the update results based on the update result

information.

25. The image forming apparatus as claimed  
in claim 24, wherein said update result outputting  
5 unit either prints the update results, transmits an  
e-mail message indicating the update results, or  
displays a screen indicating the update results.

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26. The image forming apparatus as claimed  
in claim 24, wherein the update result information  
includes at least one of the version of a program  
15 before update, the version of the program after  
update, the date and time the program is updated, and  
whether the program is updated successfully.

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27. The image forming apparatus as claimed  
in claim 24, wherein said update result information  
creating unit stores the update result information in  
25 a non-volatile storage unit.

28. The image forming apparatus as claimed  
in claim 27, wherein said update result information  
creating unit accumulates the update result  
5 information.

10 29. The image forming apparatus as claimed  
in claim 27, wherein  
said control unit restarts the image  
forming apparatus after said update result  
information creating unit stores the update result  
15 information in the non-volatile storage unit; and  
said update result outputting unit outputs  
the update results after the image forming apparatus  
is restarted.

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30. A method of updating a plurality of  
programs for an image forming apparatus, comprising  
25 the steps of:

acquiring an update program for updating  
the programs; and

updating each of the programs in the order  
of the number of processing units through which a  
5 control unit and the processing unit in which each  
program is installed communicate with each other.

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31. The method as claimed in claim 30,  
further comprising the step of:

rebooting the processing unit in which the  
program is updated.

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32. The method as claimed in claim 31,  
20 wherein the processing unit in which the program is  
updated is rebooted in the order in which the  
programs are updated.

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33. The method as claimed in claim 30,  
further comprising the step of:

creating update result information  
5 indicating update results of the programs; and  
outputting the update results of the  
programs based on the update result information.

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34. The method as claimed in claim 33,  
wherein, in the step of outputting the update results,  
the update results are either printed, transmitted as  
15 an e-mail message, or displayed on a display unit.

20 35. The method as claimed in claim 33,  
wherein the update result information includes at  
least one of the version before the update, the  
version after the update, the date and time of the  
update, and whether the program has been updated  
25 successfully.

36. The method as claimed in claim 35,  
wherein, in the step of creating the update result  
information, the update result information is added  
5 to the update result information of the past.

10 37. The method as claimed in claim 33,  
further comprising the step of restarting the image  
forming apparatus after the step of creating the  
update result information.

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38. The method as claimed in claim 37,  
wherein, in the step of creating the update result  
20 information, the update result information is stored  
in a non-volatile storage unit before the image  
forming apparatus is restarted.